

Tricare Baseline Analysis of Access and Satisfaction

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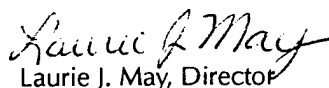
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13. ABSTRACT (Maximum 200 Words) The U.S. Navy Surgeon General tasked the Center for Naval Analyses to evaluate the TRICARE demonstration project. This demonstration is an attempt to coordinate health care for the medical-eligible military population of 300,000 in the Tidewater area of Virginia. When TRICARE matures, it will integrate a series of military treatment facilities, a preferred provider network, and a health maintenance organization, under joint service management. The evaluation consists of a comparison of several measures of effectiveness, before and after TRICARE implementation. We will be comparing Tidewater with two other regions: southern California, which is under CRI (a managed care program), and North Carolina, which is under standard CHAMPUS. The evaluation will take about three years to complete. In the meantime, we have collected baseline data for Tidewater and the comparison sites. The purpose of this paper is to present the findings of the baseline analysis of access to, and satisfaction with, health care during the pre-implementation period. This is not an evaluation of TRICARE. The results will be helpful in interpreting subsequent changes in the components of the program after TRICARE implementation.				
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Summary

Introduction

The U.S. Navy Surgeon General tasked the Center for Naval Analyses to evaluate the Tricare demonstration project. This demonstration is an attempt to coordinate health care for the medical-eligible military population of 300,000 in the Tidewater area of Virginia. When Tricare matures, it will integrate of a series of military treatment facilities (MTFs), a preferred provider network, and a health maintenance organization (HMO), under joint service management.

The evaluation consists of a comparison of several measures of effectiveness, before and after Tricare implementation. We will be comparing Tidewater with two other regions: southern California, which is under CRI (a managed care program), and North Carolina, which is under standard CHAMPUS. The evaluation will take about three years to complete. In the meantime, we have collected baseline data for Tidewater and the comparison sites. The purpose of this paper is to present the findings of the baseline analysis of access to, and satisfaction with, health care during the pre-implementation period. This is not an evaluation of Tricare. These results will be helpful in interpreting subsequent changes in the components of the program after Tricare implementation.

Methods

We collected data on access and satisfaction in the fall of 1992 using a mail survey. We sampled about 30,000 people listed in the Defense Enrollment Eligibility Reporting System (DEERS), stratified by catchment area within geographic region, military status, and paygrade of the military sponsor. About 40 percent of those sampled responded to the survey. When we compared the demographic characteristics and health care utilization patterns of responders and nonresponders, we

found little evidence of response bias. We concluded, therefore, that the resulting sample is representative of the population for purposes of the evaluation.

Our approach to presenting the results of the baseline analysis is to contrast measures of access and satisfaction for the different strata of the sample. We used a statistical model to estimate marginal effects of regional and demographic variables that may exist at baseline. The model incorporates measures of "health status" to control for any differences in this factor that might affect access or satisfaction among population groups. All estimates of the extent of access and satisfaction with medical care are model based.

We are emphasizing comparisons of access and satisfaction of those who use CHAMPUS, Medicare, and civilian private insurance. Of particular importance for Tricare is whether any differences that may exist at baseline subsequently change with the introduction of Tricare.

Results

Access to health care

We used three kinds of measures of access to health care:

- Availability and ease of obtaining care
- "Realized" access, based on utilization
- Efficiency of the process of receiving care.

Place of care

We estimated that 12 percent of the population do not have a regular source of medical care. Those in paygrades E1 to E4 tended to be less likely than others to have a regular place of care. Of those who reported having a regular source, about 68 percent reported that an MTF was their usual place of care. However, 21 percent said that the emergency room (ER) at an MTF was their usual place of care. This compares to 3 percent who reported a civilian hospital ER as their regular place of care.

Although the majority of beneficiaries reported that the MTF was their regular source of care, many were not able to get care there when they felt they needed it. Of the 63 percent who first sought care at an MTF, about 10 percent were redirected to CHAMPUS or Medicare. Retired military and dependents of those on active duty were most likely (20 percent) to be asked to seek other sources of care. These findings are consistent across regions.

Realized access

Utilization of the medical care system for preventive medicine is considered by health researchers as an indication of access. We compared self-reported rates for seven preventive medicine procedures for those whose regular source of care is the MTF with those of the general population who use civilian facilities. We found that military health care beneficiaries had a significantly greater rate of preventive medicine procedures performed than the population in general. Those using civilian facilities had the highest rate of preventive procedures. Those living in southern California (SOCAL) reported more preventive medicine procedures.

We also looked at the number of people who had one or more outpatient visits as a measure of access. About 74 percent reported an outpatient visit in the six-month period preceding the survey. We found that those in the North Carolina region were less likely (70 percent) to have an outpatient visit than those living elsewhere. Those reporting higher proportions of visits were spouses of E1s to E4s and those with civilian doctors as their usual source of care.

Process measures

We looked at various aspects of being "processed" through the course of a medical visit, including ease of making an appointment and time spent waiting to see a health care professional after arriving for an appointment.

The majority of beneficiaries (63 percent) used the telephone to make an appointment for their medical visits. About half of those who use the MTF as their regular source of care tried to make an appointment in this way. For those who succeeded, it took them twice as many telephone calls as those who make telephone appointments with civilian doctors. (The walk-in rate to see civilian doctors was 18 percent.)

People are concerned about how long they have to wait to see a health care professional after arriving for an appointment. Waiting time at an MTF is nearly double that for civilian facilities. Similarly, 87 percent who saw a civilian doctor waited 30 minutes or less, as compared to 56 percent of those at an MTF.

Conclusions

The general picture that emerges from our analysis of the baseline data is that access to the MTFs is not as good as access to civilian facilities and practitioners. After controlling for demographic and health status differences between those using MTF and civilian providers, we found:

- Higher utilization of the MTF ER as a regular place of care
- Higher MTF nonavailability rates for non-active-duty beneficiaries
- Longer waiting times at MTFs to see health care professionals
- Difficulty in making an appointments at MTFs by telephone
- Lower levels of preventive medicine than for those using nonmilitary facilities (but higher than national averages)
- Lower utilization rates than those using civilian practitioners.

We also observed different levels of access among subgroups sampled from the beneficiary population. For example:

- Access is better for those in the SOCAL region (easier to make an appointment; less waiting time)
- Active duty members have better access to the MTF than their dependents or retired personnel.

Satisfaction

About 79 percent of those surveyed were generally satisfied with their health care. Satisfaction was higher for those with civilian sources of care (92 vs. 76 percent for MTF). We also observed that retirees were the most satisfied (91 percent), as a group, whereas E1-E4s were the least satisfied (71 percent). Levels of overall satisfaction were slightly higher for those in southern California (80 percent) than elsewhere.

Satisfaction has several components. We asked people to rate their satisfaction with eight specific aspects of health care. Our analysis of the data showed that satisfaction with the quality of care was the major determinant of overall satisfaction.

We found that different components were related to dissatisfaction. Major dissatisfiers are related to access. Waiting to see a doctor after arriving for a medical appointment seems to be a major annoyance at both MTF and civilian sources. For those using the MTF, time to park was a major dissatisfier. For those using civilian facilities, cost was a strong dissatisfier.

Although people were generally satisfied with their health care, levels of satisfaction were higher for those using civilian facilities and practitioners. The major component of satisfaction was quality of care. Satisfaction with quality of care is related to:

- Amount of time physicians spend with their patients
- Manner in which diagnostic and treatment information is communicated
- Friendly and courteous bedside manner
- Perceived ability of physicians.

Those who use an MTF as their usual source of care were less satisfied with these aspects of quality of care than those using civilian sources. Improving on these aspects of quality of care at MTFs should result in higher levels of satisfaction.

Background

The purpose of this research memorandum is to present the findings of our analysis of the baseline data on satisfaction and access to health care we collected for the evaluation of the Tricare demonstration project.

Tricare

The Office of the Assistant Secretary of Defense for Health Affairs (OASD(HA)) has sponsored several demonstration projects for managed health care. Tricare is the first attempt to coordinate the military and civilian components of health care among the joint services in a circumscribed geographic area. It serves a population of about 300,000 active duty and retired military and their family members in the Tidewater area of Virginia. When the system matures, it will consist of a network of MTFs, civilian preferred providers, and a health maintenance organization (HMO).

Tricare offers beneficiaries a host of managed care options that differ from the choices under the traditional military health system, in which beneficiaries receive care through military and civilian treatment facilities. Tricare offers beneficiaries three health care options:

- Tricare Prime—a managed care option centered on the MTF and supplemented by a network of civilian providers. Beneficiaries who enroll in Tricare Prime will be guaranteed access and will receive increased coverage. Except for emergency care, Tricare Prime members must obtain all primary care from their primary care manager or another provider to whom the member is referred.
- Tricare Extra—a preferred providers' network. On a case-by-case basis, beneficiaries can use the preferred providers' network and have a reduced level of cost sharing.
- Tricare Standard—the standard CHAMPUS benefits plan.

CNA tasking

The Navy is the lead service for the Region 2 Tricare program. The Navy Surgeon General has asked CNA to evaluate the success of the Tricare program in achieving its goals in five areas:

- Beneficiary access to care and perceived satisfaction
- Cost containment
- Medical-mission-related readiness
- Quality of care
- Military-provider job satisfaction.

Evaluation design

In our evaluation, we want to determine how much of a change in the aforementioned areas can be attributed to the Tricare program alone. We will attempt to isolate program effects by comparing changes in measures of effectiveness (MOEs) at the Tricare sites with other sites before and after program implementation.

We used two kinds of comparison sites in our design. At baseline, military medical care in Tidewater is provided by MTFs and by civilian providers. We chose two catchment areas in North Carolina—Camp Lejeune and Cherry Point—as comparison sites because they also use MTFs and CHAMPUS. We expect military care at the North Carolina sites to be managed much as it is now when we plan to make the comparison with Tidewater after Tricare implementation. Therefore, changes observed in North Carolina during the time period will serve as a control for changes that take place in the absence of managed care.

The second group of catchment areas we used for controls are in southern California (SOCAL). Military medical care at these sites is under a managed care system known as the CHAMPUS Reform Initiative (CRI). Use of these sites will allow us to compare Tricare with another form of managed military medical care.

CRI was designed to improve access to medical care at a lower cost, through coordination between military and civilian components of the Military Health Services System. It has been in existence since 1988. The major features of the program are as follows:

- An HMO enrollment option called CHAMPUS Prime. Enrollees are required to obtain care from either civilian provider networks set up by the government or at an MTF. Benefits to enrollees include a wide variety of preventive care not covered by standard CHAMPUS, a small copayment of \$5 per visit, and no paperwork because providers file claims.
- A preferred provider organization (PPO) option called CHAMPUS Extra. Those who used selected civilian providers have a lower copayment per visit than a standard CHAMPUS visit (15% vs. 20%). Enrollment is not necessary to use the PPO.
- A health care finder. This is a referral service to channel beneficiaries to an appropriate source of care—either military or civilian. Use of this service benefits the government through cost savings by recommending lower cost providers.
- A resource-sharing agreement between military hospitals and the civilian contractor. The contractor provides the MTF with personnel, equipment, and supplies at lower costs.

The RAND Corporation has done an evaluation of CRI [1]. Major findings related to access and satisfaction are that CHAMPUS Prime enrollees reported the following:

- Better access than those in a control group living outside the CRI geographical region who used standard CHAMPUS
- Increased utilization of preventive care procedures
- Higher levels of satisfaction with most aspects of both MTF and civilian care than nonenrollees at CRI and control sites.

These results suggest that our baseline results should show higher levels of access for those in the SOCAL comparison group. The level of satisfaction for the SOCAL group should depend on the mix of CRI Prime program participants and nonparticipants. At the time of our survey, about 20 percent of the SOCAL beneficiary population

was enrolled in the program. Extrapolating from the RAND data, this should result in higher levels of satisfaction at the SOCAL sites, in contrast to Tidewater and North Carolina.

We matched SOCAL comparison sites to the three Tricare sites on the basis of size and use rates of military hospital, presence of a military teaching hospital, CHAMPUS use rates, dominant branch of service, and beneficiary population characteristics. The beneficiary populations associated with a given site are defined by those living within the boundaries of the military health care catchment areas centered on a military hospital (about a 40-mile radius from the MTF). We established the following pairs of Tricare and control sites, based on these criteria.

Service	Tidewater Tricare site	SOCAL comparison site
Navy	Naval Hospital, Portsmouth	Naval Hospital, San Diego
Air Force	1st Medical Group (TAC), Langley Air Force Base	22nd Strategic Hospital, March Air Force Base
Army	McDonald Army Hospital, Fort Eustis	Weed Army Hospital, Fort Irwin

An additional catchment area—Camp Pendleton—was added to the SOCAL sites to capture more completely the military health care beneficiary population in the geographical area.

Baseline

The scope of this paper is limited to a description and analysis of beneficiary access and satisfaction with health care *before* Tricare was implemented. The data for the baseline analysis were collected in September 1992 and represent a 6- to 12-month snapshot of beneficiary perceptions of military health care in Tidewater and the comparison sites. We will use these data at a later time as a basis for comparing military health care under Tricare.

Survey

Limited administrative data exist on beneficiary satisfaction and access and background characteristics that influence health care utilization. Therefore, to evaluate Tricare in the areas we need to examine, we must collect data by surveying beneficiaries.

We fielded a baseline survey at our nine sites in the fall of 1992. A follow-up survey is planned for the fall of 1994. (For a discussion of how we developed the survey and the implementation plan, see [2].) The survey asks beneficiaries questions about satisfaction, access, their health status, and utilization.

The survey was adapted from one used by the RAND Corporation to evaluate other OASD(HA) demonstration projects, such as CRI. It consisted mostly of multiple-choice questions on health status, reactions to experiences with military and civilian health care, and personal characteristics. Questions about health status were included because previous research has shown this to affect satisfaction with, and utilization of, health care [3].

Sample

The sample of potential survey respondents represented a random sample of the beneficiary populations at each of the study sites. The population was stratified along dimensions of:

- Catchment area (nine areas)
- Paygrade of military sponsor (two groups: E1-E4 and above E4)
- Dependency status (sponsor or spouse)
- Active duty status (active duty or retired).

We chose this stratification because we felt that subgroups within strata could be affected differently by their experiences with the military health care system. (See [4] for a more detailed discussion of the sampling plan.) We chose the sample size to provide a sufficient number of respondents from each subgroup to allow us to draw statistically reliable conclusions about differences in subpopulation perceptions about access and satisfaction.

Methods

In this section, we discuss the survey data and the development of MOEs for assessing access and satisfaction.

Perspective

The survey posed questions about experiences with the health care system from two perspectives:

- Most recent medical visit during the past year
- Any/all medical visit(s) in the past 6 to 12 months.

We are basing our analysis of access and satisfaction mainly on reactions to the most recent medical visit. By restricting ourselves to this occasion, we expect that respondents will have focused on a specific experience. This should result in more reliable data by eliminating any variance in experiences over the past year. We make the assumption that the most recent visit is a "typical" one for most people.

A major focus in the analysis is differences in access and satisfaction with experiences at an MTF in contrast to a civilian medical facility. We classify beneficiaries by their usual source of care on the basis of their response to the survey. Those who used one or more military-sponsored facilities (i.e., military hospital ER, military outpatient clinic, PRIMUS or NAVCARE clinic), regardless of the use of an additional civilian source of care, were classified as "MTF" for purposes of the analysis. Those using only civilian sources of care were classified as "civilian." (About 5 percent of respondents reported a mix of military and civilian sources as their usual source of care.)

Measures

Access

Access to medical care has been measured in a variety of ways. One class of measures is related to utilization of care. This has been termed “realized” access. These MOEs are used to indicate the ability of people to get into the care system. Medical visits for preventive medicine (physical exams, blood pressure checks, mammograms, etc.), as well as “sick” visits, fall into this category. We measured the proportion of beneficiaries who had any medical visit, and visits for preventive care.

The flip side of the coin for realized access could be termed “unrealized” access, which occurs when a person needs care but does not get it. We asked people to enumerate reasons they might not have gotten care when they were sick.

“Process” measures describe the process of obtaining care. These measures are used as indicators of potential access and the operating efficiency of the medical system. This category includes making an appointment for a medical visit and waiting time to see a health care professional after arriving for an appointment. Our survey covers a variety of these process measures.

Satisfaction

Measures of satisfaction with medical care fall into two categories:

- General satisfaction
- Instance-specific satisfaction.

General satisfaction is typically measured by asking about overall impressions of the medical system, whereas instance-specific measures focus on specific visits or encounters. The advantage of the former is that it provides a summary measure. The advantage of the latter is that it forces the respondent to focus on specifics. This focus should produce a more reliable response.

General satisfaction

The scales we used to measure general satisfaction came from the Patient Satisfaction Questionnaire (PSQ), developed by Ware [3]. The PSQ was designed to measure four attributes of general satisfaction with health care:

- Overall satisfaction
- Access
- Financial aspects
- Doctor care (quality).

We used an 18-item subset of the original 50-item PSQ to form the scales. The scales were formed empirically by combining items on the basis of a factor (principal components) analysis of the correlations among item responses. The format of the PSQ items consists of a statement about some aspect of medical care, such as, "My doctor is the best," to which one responds with a scale anchored by the statements "highly agree... highly disagree." Satisfaction is inferred by the tone of the item. For example, agreeing with the statement, "My doctor is the best," presumes satisfaction with the medical care provided by that doctor.

Instance-specific satisfaction

Here, we again use perceptions associated with the last medical visit as the basis for measuring satisfaction. Unlike the PSQ, the items used to measure instance-specific satisfaction directly measure satisfaction. We asked respondents to indicate the degree of satisfaction with a specific attribute of the medical visit. For example: "The amount of time you had to wait to see the doctor once you arrived for your appointment." The response scales had five alternatives:

1. Very satisfied
2. Somewhat satisfied
3. Neither satisfied nor dissatisfied
4. Somewhat dissatisfied
5. Very dissatisfied.

We dichotomized responses to these items to indicate either satisfaction or nonsatisfaction. We did this by scoring a response as "satisfied" if alternative 1 or 2 was chosen. We also looked at certain aspects of dissatisfaction. A response of either somewhat or very dissatisfied was scored as "dissatisfied"; other responses were scored as "not dissatisfied."

We used this elaborate procedure to allow us to estimate the probability of satisfaction or dissatisfaction with various aspects of medical care. In this way, we can report satisfaction outcomes as the percentage of a given population that is satisfied.

Analysis methods

In this section, we discuss the techniques we used to estimate degrees of access and satisfaction, and to contrast the subgroups in the beneficiary population.

Weighting

We weighted the survey data to adjust the sample composition to more closely reflect the actual composition of the population. The weight assigned to each person with usable survey data is equal to the inverse probability of being in the sample. We used the following formula to compute the weight of a person in the i th cell of the sample:

$$w_i = N_i / n_i \quad (1)$$

where N is the number of beneficiaries in the population and n is the corresponding number of people in the resulting sample. The distribution of weights, w_i , has the property that their sum across the sample is equal to the size of the overall population. These weights were rescaled to sum to the number of observations in the sample, by dividing each w_i by the average value of w . This was done to facilitate subsequent statistical processing.¹

-
1. It is convenient to have the sum of the weighted number of observations equal the actual number in statistical packages that compute degrees of freedom as the sum of the weights.

Modeling subpopulation effects

We developed a series of statistical models to isolate the effects of subpopulation membership on our various outcomes. In general, we modeled an access- or satisfaction-related MOE, or outcome variable, as a function of our stratification variables and several controls. These included:

- Geographic region
- Active duty status
- Relationship to military sponsor
- Source of health care
- Health status.

We included the stratification variables in the model to evaluate their marginal contribution to the prediction of access and satisfaction measures. We originally considered such measures as age, income, and number of dependents as possible predictors of access and satisfaction. These were subsequently excluded because they did little to improve the predictions, probably because of their correlation with other variables used in the model. Therefore, we used the more parsimonious set shown above.

We used ordinary least squares multiple *linear regression* for the analysis of continuously distributed outcome measures, such as the PSQ factors. For analyses with dichotomous outcomes, we used multiple *logistic regression*. The models were estimated using weighted survey data.

Using weighted data in regression analysis will sometimes result in incorrect estimates of the standard errors and, hence, the significance levels of the coefficients. In the present case, this is because the weights are related to our sampling categories. Though the weights have the desired effect of changing the means of the variables, they also have the undesirable effect of changing the asymptotic covariance matrix of the estimates. We corrected for this by using the procedure suggested by Manski and McFadden [5], as implemented by Green [6] in the LIMDEP software.

Linear regression

Linear models have the form:

$$Y' = a + b_1X_1 + b_2X_2 \dots + b_kX_k \quad , \quad (2)$$

where:

Y' = outcome measure

a = intercept

X = weighted k independent variable

b = regression coefficient.

We used two kinds of independent variables in these equations. One set was used to indicate subpopulation membership, such as "active duty status." Values of 1 were assigned to members of a particular subgroup, and values of 0 for those not in the group. For example, if a beneficiary or family member were on active duty, he or she was assigned a value of one. If a person came from a family in which the military sponsor was retired, that person received a value of 0 for the "active duty status" variable.

A second set of X -variables was used to control for variables that were not associated with a sampling stratum, but could differentially affect the outcome measures for those in different strata. We used such variables as "health status" and "age" for this purpose.

We estimated the marginal effects of subpopulation membership, which are dichotomous variables, in a two-step process. The initial step was to estimate the regression coefficients. The resulting coefficients for the indicator variables can be directly interpreted as the difference in Y between those whose corresponding X -values are 1 and 0. We estimate the marginal effects of subpopulation membership by setting the dichotomous subpopulation variable to 0 or 1, while holding the other explanatory variables constant at their means.

The procedure we used for estimating average Y -values within subpopulations was to substitute values for the X -variables in equation 2, as shown in equation 3:

$$Y'_i = a + b_i X_i + \sum_{j \neq i}^{k-1} (b_j \bar{X}_j) \quad , \quad (3)$$

where:

Y'_i = the estimated value of the dependent variable for people having a value of "X" (either 0 or 1) for the i th variable

\bar{X}_j = the mean of the j th variable ($j \neq i$).

When $X_i = 1$, Y'_i represents the estimated value of the outcome variable for those with the i th characteristic. When $X_i = 0$, Y'_i represents the estimate for those without the characteristic.

This procedure is also used to estimate the effects on Y'_i of changing the values of the control variables. For example, if we want to estimate some outcome in a population with an expected increase in the proportion of retirees, and an "age" variable was used in the model, the value for age could be changed to reflect that of the adjusted population composition.

Logistic regression

This method was used to estimate the probability of satisfaction/access based on items that were dichotomously scored. Logistic regressions have the form:

$$\text{Ln}(p_z / (1 - p_z)) = a + b_1 X_1 + b_2 X_2 + \dots + b_k X_k \quad , \quad (4)$$

where p_z is the probability of some event or characteristic, z . The a , b , and X parameters are as described above. This model constrains all predicted probabilities to be between 0 and 1. Once we estimate the b -values, we solve for p , as follows:

$$p_z = 1 / (1 + \exp(a + b_1 X_1 + b_2 X_2 + \dots + b_k X_k)) \quad . \quad (5)$$

Estimating the average probability of an event (point estimation) for particular subgroups using logistic regression procedures is not as straightforward as in the linear case. That is, substitution of mean X -values in equation 5 will not necessarily produce accurate predictions because of nonlinearity of the logistic function.

Using a variant of the "Oaxaca decomposition method" [7], we estimated the probability of the outcome variable z , for those having the i th characteristic, i.e., $X_i=1$, as follows:

- Estimate b -coefficients using data for the entire sample.
- Use the coefficients to form an equation to estimate p for each individual in the sample.
- To determine p_z for those in a particular subgroup—males, for example—set the X corresponding to the GENDER variable equal to 1 for all observations (i.e., both males and females).
- Compute p_z for all observations by:
 - Using the actual X -values and corresponding b (except GENDER) for each observation
 - Applying the inverse logistic function $(1/(1 + \exp(-z)))$
- Compute the mean of the "fitted" values (i.e., p_z).
- This is an estimate of the probability of the event for males.

The procedure for females would be the same, except the coefficient for GENDER would be set to 0 for all observations.

This procedure produces reasonable results, in that a weighted average of the subgroup means is approximately equal to the observed mean of the event (the y -variable). For example, the modeling procedure predicts that the mean probability of overall satisfaction is .79, while the observed value is also .79. The separation of the estimated means of the subgroups is "proportional" to the size/significance-level of the coefficient for the indicator variable representing the subgroup.

This procedure is analogous to estimating subgroup means in linear regression by setting the value of the dummy variable to 1 or 0, and holding other variables constant at their means.

Regions versus catchment areas

We sampled beneficiaries from nine catchment areas. The catchment areas are spread across three geographical regions. Each region is characterized by a different type of health care management system.

Because we wish to examine differences in outcomes, as related to region, we combined data from those catchment areas composing a region.

Statistical dependencies and age

Previous studies have found satisfaction to be dependent on the age of the beneficiary. Therefore, it is important that we statistically control for age in our models. At first glance, the most straightforward way to do this would be to include an "age" variable in the equations. However, the Active Duty Status (ADS) variable, which consists of three categories (E1 to E4 active duty, above E4, and retired), is highly correlated with age. (Note in table 1 that we are unlikely to find anyone in the E1 to E4 paygrade group who has the mean age.) Using age along with the ADS variable resulted in colinearity, which produced uninterpretable results in many cases. Therefore, an "age" variable was not used for most of the analyses.

Table 1. Ages of those in Active Duty Status groups (years)

Active Duty Status	Mean	Standard deviation
E1 to E4	23.7	3.7
Above E4	34.0	6.6
Retired	58.1	10.4
Overall	39.3	16.0

In some instances, we did include "age" as an independent variable. This was for analyses of some aspects of "realized access." There, we were able to directly control for age because the measures were on a restricted subpopulation, whose members were more homogeneous with respect to age.

Results

Response rates

Response rates to the survey were generally poor. On average, response and yield rates² were .38 and .45, respectively. Retired personnel, and those in the above E4 group, had the highest response rates (50 to 70 percent), whereas those in the E1 to E4 groups had the poorest rates (16 to 30 percent). We were concerned that a bias could be introduced if nonrespondents and respondents differed with respect to health-related factors. That is, if nonrespondents were greater consumers of health care, data collected from survey respondents would underrepresent utilization in the general population.

In [8] we show that the respondent sample is about 1.2 years older than the population they represent and that there is a higher proportion of females among respondents than in the population (51 vs. 39 percent). However, when we compared the number of civilian provider outpatient visits and MTF admissions of respondents and nonrespondents, we did not find a statistically significant difference. We concluded, therefore, that respondents behaved similarly to nonrespondents with respect to utilization. We would expect some carry-over for the similarity of respondents' and nonrespondents' perceptions about access and satisfaction. Unfortunately, we do not have an independent data source to confirm this, and we cannot rule out the notion of bias.

2. Response rate is the fraction of surveys sent that respondents returned. Yield rates are response rates adjusted to account for undeliverables and ineligible. That is: response rate = RETURNS/SENT and, yield rate = RETURNS - INELIGIBLES/SENT - UNDELIVERABLES - INELIGIBLES.

Health status

Factor analysis

We used principal components factor analysis to determine the underlying structure among the health status items. Four factors, or scales, could be used to represent the content of the health status items. We rotated the four factors to produce the factor loadings shown in table 2. The loadings, or coefficients, are interpreted to indicate the correlation of a particular health status item with the underlying hypothetical factor. Coefficients whose absolute value was 0.4, or greater, are traditionally used as a barometer of "belonging." These factors roughly agree with the results of other health care researchers using these types of items. Factor scores were computed by regressing the items on the factors.

Table 2. Health status Varimax factor loadings

Question number	Contents	Health status factor ^a			
		Current	Mental	Past	Work
5E	Health is excellent	<i>-0.76</i>	0.18	-0.36	0.01
5D	Somewhat ill	<i>0.74</i>	-0.18	-0.15	0.06
5F	Healthy as anyone	<i>-0.74</i>	0.15	0.34	0.02
6	Weighed down by health	<i>0.73</i>	-0.32	-0.09	0.22
1	General health	<i>-0.72</i>	0.19	0.27	0.00
5B	Feeling bad lately	<i>0.71</i>	-0.35	0.00	0.06
4	Limits any activity	<i>0.65</i>	0.00	-0.20	0.30
7	Body pain	<i>-0.64</i>	0.22	0.06	-0.09
3	Limits work	<i>0.58</i>	0.01	-0.16	<i>0.44</i>
8A	Health limits social activity	<i>0.57</i>	-0.24	-0.09	<i>0.45</i>
5C	Never seriously ill	-0.10	0.04	0.85	-0.07
5A	No long illness	-0.28	0.10	0.74	-0.01
5G	Once gravely ill	0.24	-0.16	-0.58	0.12
8C	Felt calm and peaceful	-0.27	<i>0.72</i>	0.11	0.08
8E	Happy	-0.22	<i>0.76</i>	0.09	0.06
8B	Nervous person	0.17	<i>-0.71</i>	-0.08	0.07
8F	Depressed	0.10	<i>-0.76</i>	-0.08	0.20
8D	Felt blue	0.14	<i>-0.80</i>	-0.05	0.10
2	Prevents work	0.14	-0.09	-0.07	<i>0.84</i>

a. Italics indicate |values| > 0.4.

The first factor, which we call "current health," emphasizes one's current state of health and well-being. It is dominated by positive responses to such items as "my health is excellent" and by negative responses to "I am somewhat ill." We used the factor score from this scale as a control variable in analyses of access and satisfaction with one's most recent medical visit.

The second factor represents mental health status. It is dominated by responses to items such as "felt blue" and "felt depressed."

The third factor represents long-term or chronic health, and its items relate to past problems with health.

The fourth factor we labeled "work related." It measures work- and social-related consequences of poor health.

Subpopulation contrasts

Of particular interest in comparing health status measures across subpopulations is whether healthier people seek care at MTFs or from civilian providers (i.e., through CHAMPUS, Medicare, or private insurance). Table 3 summarizes levels of health status across beneficiary subpopulations. The scales were standardized to have a mean of 50 and standard deviation of 10, and the direction of the scales runs from poor health (low scores) to good health (high scores).

Most of the differences among subpopulations are age related, with older people being in poorer health. We also found that spouses of military sponsors had lower mental health scores. There were no measurable differences in health status related to where one sought care (i.e., MTF or civilian facilities). Regional differences were also negligible. These results suggest that military beneficiaries do not select their usual source of health care on the basis of their health status.

Table 3. Subpopulation differences in health status

Group	Health status factor			
	Current	Chronic	Mental	Work
Retired ^a	46	48	51	49
E1-E4	52*	51*	47*	50*
Above E4	51*	51*	50*	50*
MTF ^a	50	50	50	50
Civilian	50	50	50	50
Tidewater ^a	50	50	50	50
SOCAL	50	50	50	49
North Carolina	49*	51*	51	50
Spouse ^a	49	50	48	50
Sponsor	50*	50	51*	50

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Access

Having a usual source of care should improve one's ability to obtain care. In table 4, we show the proportions of subgroups of the population with respect to three self-reported regular places of care:

- None
- Emergency room (ER) at an MTF
- ER at a civilian facility.

About 32 percent of the beneficiary population has what might be considered "inappropriate" sources of health care (i.e., the source of care is inefficient or nonexistent). A large segment of the population (17 percent) depends on the MTF ER as a regular source of care. Younger, active duty beneficiaries tend to have the highest rates of perceiving that they are without a regular source of care. We interpret this to mean that these younger people either do not know how to use the health care system or don't plan ahead for medical contingencies.

Table 4. Usual place of care

	Usual place of care (percentage)		
	None	MTF ER	Civilian ER
Retired ^a	8	15	5
E1-E4	16*	18*	2*
Above E4	12*	17*	2*
Tidewater ^a	12	17	4
SOCAL	11	15*	2*
North Carolina	11*	18	2*
Sponsor ^a	15	17	2
Spouse	9*	16*	3*
Mean	12	17	3

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

It is possible that people do not have a regular source of care because they are recent arrivals to the area. We estimated the probability of having a regular place of care for those living in their current homes for six months³ or more. The correlation between these two measures was negative, but small. (Among those who lived within 50 miles of their current home for a 6-month period, 13 percent did not have a regular place of care. This percentage increases to 14 for those living in their current homes for 36 months.)

We estimate that about 88 percent of beneficiaries do have a usual place of care. We categorized that place as MTF if at least one of the places indicated is a military facility; otherwise, we classified it as a civilian source of care. We show the relative distribution of MTF versus civilians as "usual source of care" by geographic region (table 5).

3. We required a minimum of six months in the current catchment area for inclusion in the sample.

Table 5. Usual source of care by region
(percentage of beneficiaries
within region)

Region	Usual source of care	
	MTF	Civilian
Tidewater	72	28
SOCAL	64	36
North Carolina	83	17

In general, people are consistent in their choice of a military or civilian health care facility. The data in table 6 show that 91 percent of beneficiaries went to the usual source of care on the most recent medical visit.

Table 6. Usual source of care versus source of
care for last visit (percentage by source
and occasion)

Usual source of care	Source of care—most recent visit		
	MTF	Civilian	Any visit
MTF	64	4	68
Civilian	5	27	32
Any	69	31	100

Availability

About 68 percent of survey respondents used military facilities for their usual source of health care. However, it was not always possible for some to receive the care they sought at the MTF. Of the 67 percent who first sought care at an MTF, about 10 percent responded that they actually received care from a civilian provider. We interpret this to mean that MTF care was either unavailable or unacceptable to these beneficiaries. Table 7 shows that it is retirees and dependents of those on active duty who could not get care where they wanted it. These findings are consistent across regions.

Table 7. MTF unavailability rates

Subgroup	Percentage of those who tried MTF first, but used civilian care
Active duty ^a	2
Retired	22*
E1-E4 spouse	21*
Above E-4 spouse	20*
Tidewater ^a	10
SOCAL	9*
North Carolina	11*

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Nonavailability is not the only reason survey respondents did not seek medical care when they were sick. We asked respondents to indicate why they did not seek medical care the last time they were sick. After inability to get an appointment, length of office wait was the greatest deterrent for seeking care, for those using both MTF and civilian sources of care.⁴ (See table 8.)

Realized access

We will look at two aspects of realized access: utilization of preventive care, and general utilization of the health care system.

The use of preventive medicine is more extensive for military health care beneficiaries relative to the general U.S. population (adjusted to have the same age and gender mix as the current sample). Within the military population, those who use civilian sources usually have a higher level of preventive care than those whose regular source of care is the MTF. Regional differences were also evident. More preventive medicine seems to be practiced in southern California. (See table 9.)

4. Although survey respondents could have expressed several reasons for not seeking care, we treated their responses as independent in the analysis. This seemed justified because the correlations of responses among the reasons were virtually zero. Table 23 (in the appendix) shows the eigenvalues for the correlation matrix. They are approximately equal in size, which is an indication of the independence among these measures.

Table 8. Reasons for not seeking care
(percentage of source-of-care
group with reason)

Reason	Source of care	
	MTF ^a	Civilian
No appointment	30	24*
Long office wait	30	24*
Afraid	11	13*
Cost	6	21*
Too sick	6	21*
No child care	6	6
No regular doctor	5	10*
Couldn't get there	5	4
Couldn't get off work	3	3

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Table 9. Preventive care utilization (percentage of subpopulation)

Subpopulation	Blood pressure check	Annual physical	Rectal exam	PAP test	Breast exam	Any mammogram (age 40–49)	Annual mammogram (age 50+)
Civilian care	91.4	58.0	54.2	77.7	76.3	94.1	63.9
MTF care ^a	90.0*	47.2*	45.9*	71.1*	67.4*	91.4*	60.1*
Tidewater ^a	89.5	49.4	51.2	72.1	69.7	89.0	58.7
SOCAL	91.7*	51.4*	49.4	75.0*	72.9*	95.6*	64.0*
North Carolina	88.9	50.0	52.8	72.7	71.0	95.0*	66.7
Active duty ^a	92.6	52.9	59.6	82.5	82.6	96.1	— ^b
Retired	87.9*	49.0*	49.2*	65.4*	68.8*	90.3*	62.8
E1–E4 dependents	89.4*	50.9	31.3*	79.7	79.7	61.8*	— ^b
Above E4 dependents	88.7*	45.7*	49.1*	64.0*	64.4*	90.6*	58.1
Military population	90.5	50.5	50.4	73.6	71.4	92.5	62.5
U.S. general population ^c	83.1	—	—	48.2	51.8	43.1	15.9

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

b. Too few observations for reliable estimate.

c. From [9 and 10]; weighted to age and sex distribution of current sample.

We view use of the health care system as a measure of realized access as well as need. We attempted to isolate the access component of having a medical visit by holding health status constant when deriving the estimates.

In table 10, we show the estimated percentages of those who had one or more outpatient visits during the six-month period preceding the survey. We see large variations among subgroups on this measure. (All but the Tidewater vs. southern California regional comparisons are statistically significant.) In particular, we see greater access to and utilization of civilian care than for MTF care, poorer access for those in the North Carolina region, and poorer access for retired people than active duty and their dependents. A higher proportion of spouses reported having a visit than sponsors. This is likely an indication of need rather than ability to gain access.

Table 10. Adults with at least one outpatient visit, past six months (percentage of population)

Variable	Mean
MTF ^a	73.4
Civilian	76.4*
Tidewater ^a	74.6
SOCAL	75.1
North Carolina	70.4*
Retired ^a	70.0
Above E4	73.6*
E1-E4	79.1*
Sponsor ^a	72.8
Spouse	77.0*
Average	74.3

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Process measures of potential access

We look at three "process" measures of access:

- Waiting time to see doctor
- Number of phone calls to get appointment
- Time between appointment call and visit.

These are used to indicate ease of administrative aspects of seeing a health care professional.

People frequently complain about how long they have to wait to see a health care professional after arriving for an appointment. Waiting time is estimated both in minutes and as the percentage of a beneficiary group who waited 30 minutes or less. The data in table 11 show that waiting time at an MTF is about 17 minutes longer than at a civilian facility. Similarly, 87 percent who saw a civilian doctor waited 30 minutes or less, as compared to 56 percent of those at an MTF. We show later that this waiting time is truly an annoyance, as reflected in related measures of satisfaction.

Table 11. Waiting time to see a doctor during last medical visit

Subgroup	Wait time (minutes)	Wait < 30 minutes (percentage)
MTF ^a	37	56
Civilian	20*	87*
Tidewater ^a	32	65
SOCAL	30*	67
North Carolina	35*	62
Retired ^a	29	70
E1-E4	33*	63*
Above E4	33*	64*
Sponsor	31	66
Spouse ^a	33*	64*
Mean	32	65

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

The majority of beneficiaries (63 percent) used the telephone to make an appointment for the most recent medical visit. There was considerable variation in the likelihood of trying to make an appointment by telephone among subpopulations. About half of those who use the MTF as their regular source of care tried to make an appointment in this way. For those who succeeded, it took them twice as many telephone calls as those who make telephone appointments with civilian doctors (table 12). These data suggest that the difficulty of making an appointment by telephone may be discouraging MTF users from using this means of access.

Table 12. Number of telephone calls to get appointment (last visit)

Subgroup	Proportion calling ^a	Number of calls ^b
MTF ^c	.53	2.9
Civilian	.82*	1.4*
Retired ^a	.74	2.2
E1-E4	.47*	2.5*
Above E4	.62*	2.4
Spouse	.72	2.4
Sponsor ^a	.56*	2.3*
Tidewater ^a	.67	2.6
SOCAL	.61*	2.0*
North Carolina	.50*	2.4
Average	.62	2.4

a. Proportion who tried to make an appointment by phone.

b. Of those who tried.

c. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Another measure of access is the lag time between making an appointment and the actual date of that appointment. The data in table 13 suggest that this lag time is about the same (within one day)

across subpopulations. Unfortunately, we do not know the urgency associated with needing to see a health care professional, or what people's preferences were for appointment dates. That is, some of these appointments might be for routine physicals, which tend to be scheduled well in advance.

Table 13. Lag between making an appointment and appointment date

Subgroup	Number of days
Military care	2.7
Civilian care	3.0*
Retired ^a	3.2
E1-E4	2.4*
Above E4	2.5*
Spouse ^a	3.2
Sponsor	2.5*
Tidewater ^a	2.8
SOCAL	2.9
North Carolina	2.6*

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Summary

The general picture that emerges from our analysis of the baseline data is that access to MTFs is not as good as access to civilian facilities and practitioners. We found the following:

- Higher utilization of the MTF ER as a regular place of care (perhaps as a way to gain access)
- Higher MTF nonavailability rates for nonactive duty beneficiaries
- Longer waiting times at MTF to see health care professionals

- Difficulty in making an appointment at an MTF by telephone
- Lower levels of preventive medicine than for those using civilian facilities (but higher than national averages)
- Lower utilization rates than those using civilian practitioners.

We also observed different levels of access among subgroups sampled from the beneficiary population. For example:

- For those in the southern California region, it is easier to make an appointment and there is less waiting time.
- Active duty members have better access to the MTF than do their dependents or retired personnel.

These findings are generally consistent with the patterns of access that RAND found in its evaluation of CRI [1].

Satisfaction

In general, people were satisfied with their health care. We based this conclusion on survey respondents' perceptions of what they experienced during their most recent medical visit.

Overall levels of satisfaction

Table 14 shows overall levels of satisfaction for people within the subpopulations we surveyed. Satisfaction is higher among those who use civilian facilities (92 percent vs. 76 percent for MTF) for their usual source of care. We also observe that retirees were the most satisfied (91 percent), as a group, whereas E1-E4s were the least satisfied (71 percent).

Subpopulation contrasts

We developed an interactive model to isolate levels of satisfaction for those in the three military status groups whose source of care was the MTF and those who used civilian doctors. In figure 1, we show estimated levels of overall satisfaction for those falling into these six groups. The results show that satisfaction with civilian care is uniformly high across military status groups. However, those in the active duty categories (i.e., not retired) are disproportionately less satisfied with the MTF.

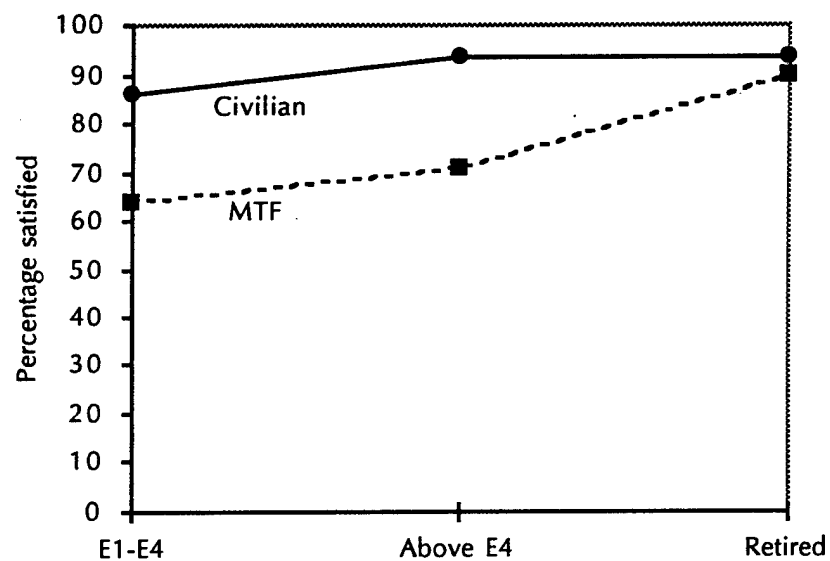
Table 14. Overall levels of satisfaction

Subgroup	Percentage satisfied
MTF ^a	76
Civilian	92*
Retired ^a	91
E1-E4	71*
Above E4	78*
Tidewater ^a	78
SOCAL	80*
North Carolina	77
Sponsor ^a	79
Spouse	78
Overall	79

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Figure 1. Overall satisfaction by paygrade group and usual source of care



Components of satisfaction

Satisfaction has many components. The survey asked people to indicate their satisfaction with eight of these components. In table 15, we show the overall satisfaction levels of those who expressed either satisfaction or dissatisfaction with individual components. The greater the difference in overall satisfaction between those satisfied and those not satisfied on a particular component, the more "important" the component is in determining overall satisfaction. The results show that satisfaction with quality of care is, by this definition, the greatest contributor to overall satisfaction among the nine components we considered. We found that 89 percent of those who were satisfied with the quality of care were satisfied overall with the most recent medical visit. Likewise, only 51 percent of those not satisfied with the quality of care expressed satisfaction with the most recent visit.

Table 15. Contribution of components to overall satisfaction (percentage satisfied overall)

Component	Yes	No ^a
Quality	89	51*
Treatment info.	82	75*
Wait for doctor	83	76*
Time with doctor	82	75*
Appointment-visit gap	81	77*
Time to park	80	79*
Cost	80	78*
Travel time	80	79

a. * Indicates statistically significant difference in overall satisfaction between those expressing satisfaction and those not expressing satisfaction with component.

Dissatisfiers

In table 16, we contrast levels of dissatisfaction for each component by source of care and region, during the most recent medical visit. Two things are apparent from the data. People who used the MTF tended to be more dissatisfied with individual components, and different components led to dissatisfaction with health care at the

MTF and civilian sources. Waiting to see a doctor after arriving for a medical appointment seems to be a major annoyance at both MTF and civilian sources. The major dissatisfiers tend not to be related to quality of care. For those using the MTF, time to park was a major dissatisfier. For those using civilian facilities, cost and waiting to see the doctor head the list of dissatisfiers.

Regional contrasts of dissatisfiers show less dramatic differences than we saw for source of care. People from North Carolina were less dissatisfied with the time it took to park and with travel time to the most recent medical visit, but more dissatisfied with the cost. People from southern California were less dissatisfied with cost, quality of care, and the gap between making an appointment and the date of the medical visit.

Table 16. Levels of dissatisfaction with components
(percentage dissatisfied)

Dissatisfier	Source of care		Region		
	MTF ^a	Civilian	Tidewater ^a	SOCAL	North Carolina
Wait for doctor	32	12*	28	26	28
Time to park	26	3*	21	21	10
Treatment information	17	6*	14	14	15
Time with doctor	16	6*	14	12*	13
Quality	14	6*	13	10	13
Travel time	8	3*	7	7	3*
Appt.-visit gap	5	2*	5	3*	5
Cost	2	15*	8	5*	9

a. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

General satisfaction measured by the PSQ

We analyzed the items from the Patient Satisfaction Questionnaire (PSQ) both for content (structure) and to compare general levels of satisfaction among subgroups. As we mentioned earlier, the PSQ measures satisfaction from patterns of responses to clusters of items. We used Principal Components analyses to determine which items to

cluster to form satisfaction scales. In previous research [1 and 3], four satisfaction factors, or scales, were used to describe the content of the PSQ. We found that three provided a more parsimonious structure. The discrepancy was that we were unable to isolate a fourth factor measuring general, or overall, satisfaction. Rather, we formed a general satisfaction scale as a composite of all (18) PSQ items. We justify the use of a general factor because a single factor explained 45 percent of the variance among the correlations among the PSQ items. (A three-factor solution accounted for 60 percent of the variance.) The general factor also had a high degree of reliability; its internal consistency index (*alpha*) was 0.922.

The factor pattern for the three PSQ factors is shown in table 54 in the appendix. The factors are described by the following kinds of items:

- Access to care—easy to get appointment; can get care when wanted
- Cost of care—patients have to pay more than they want
- Quality of care—doctor spends plenty of time with patient; does not doubt doctor's ability; satisfaction with care.

The two items used by Sloss [1] to form a "general" satisfaction factor were subsumed by our quality-of-care factor.

Table 17 shows the correlations of our general factor with each of the three specific PSQ factors. The general factor primarily measures satisfaction with quality of care. These results are consistent with our analysis of the components of satisfaction with the most recent medical visit, which we reported earlier in this paper.

Table 17. Correlations between the general and specific PSQ factors

Factor	Access	Cost	Quality
General	0.544	0.161	0.824

Factor scores for the four PSQ satisfaction scales were derived for each person in the survey sample. To facilitate comparisons, scores were standardized to have a mean of 50 and standard deviation (SD) of 10 across subgroups. Table 18 presents subgroup means.

The patterns of subpopulation differences on the PSQ factors mirror those identified from satisfaction measures of the most recent medical visit. Satisfaction with all factors except cost was greater for those reporting civilian facilities as their usual source of care. Retired people tend to have higher levels of satisfaction than those from active duty families. Regional differences and those between sponsors and spouses were not as pronounced.

Table 18. Subpopulation differences on PSQ factors^a

Group	Access	Cost	Quality	General
MTF care ^b	48.5	51.4	49.5	49.0
Civilian care	53.4*	46.8*	51.0	52.3*
Tidewater ^a	49.6	48.8	50.1	49.6
SOCAL	50.8*	51.3*	50.1	50.6*
North Carolina	48.3*	48.8	49.6	49.1
Sponsor ^a	50.1	50.7	50.2	50.1
Spouse	49.8	48.8*	49.7*	49.9
Retired ^a	51.5	48.5	47.0	53.1
E1-E4	50.1*	51.2*	52.6*	48.1*
Above E4	48.5*	50.4*	50.8*	48.7*

a. Note: factor scores scaled to mean = 50, SD = 10; higher scores indicate greater satisfaction.

b. Base group.

* Indicates statistically significant ($p < .05$) difference from mean of base group.

Summary

The driving component of satisfaction with health care is quality of care. Most of those satisfied with the quality of care tend to be satisfied with the military health care system in general. Major dissatisfiers are

related to access, such as waiting to see the doctor after arriving for an appointment and difficulty in obtaining an appointment.

Levels of satisfaction were higher for those receiving care primarily from civilian sources. The only aspect of civilian care that received lower satisfaction scores than for MTF care was the cost of care. Subgroup contrasts showed that retirees tended to be more satisfied than active duty personnel and their families.

Again, our findings seem to be consistent with those reported by RAND in its evaluation of CRI. Satisfaction was higher in the southern California region (under CRI) than in Tidewater and North Carolina, which lack a managed care program with its improved access to care. Patterns of demographic differences in satisfaction were also similar, with retirees reporting the highest levels of satisfaction.

Appendix: Supplemental tables

Logistic regression tables

Logistic regression was used to estimate the probability of an event, such as having access to an MTF or satisfaction with health care. Tables 19 through 43 show the logistic regression coefficients (B).

The following abbreviations were used for the names of variables:

Abbreviation	Definition
ADJr	Active duty sponsors, E1 to E4
ADSr	Active duty sponsors, above E4
CA	California region
NC	North Carolina region
VA	Tidewater region
FH_NOW	Current health status factor score
JR_DEP	Dependents of E1 to E4
SR_DEP	Dependents of above E4
USUAL_M	MTF is usual source of care
PG_Jr	Sponsors and spouses, E1 to E4
PG_Sr	Sponsors and spouses, above E4
MTF_MRV	Most recent visit at MTF

Table 19. Model of any usual place of care

Variable	B
ADJr	-0.781
ADSr	-0.446
CA	0.171
NC	0.003
Sponsor	-0.571
FH_NOW	-0.193
Constant	2.026

Table 20. Model of ER as regular place of care

Variable	B (MTF)	B (Civilian)
ADJr	0.605	-0.769
ADSr	0.263	-1.067
CA	-0.408	-0.451
NC	-0.188	-0.631
Sponsor	0.033	-0.613
FH_NOW	-0.121	-0.295
Constant	-1.378	-3.648

Table 21. Model of MTF nonavailability^a

Variable	B
ADJr	-1.282
ADSr	-1.110
CA	-1.901
NC	0.106
Sponsor	-1.535
FH_NOW	-0.262
Constant	-0.507

a. Modeled as probability not seen when seeking MTF care.

Table 22. Model of reasons for not seeking care

Variable	No appointment	No doctor	Cost	Too sick	Work	Child care	Office wait	Transportation	Afraid
FH_NOW	-0.095	0.014	-0.015	-0.015	-0.298	-0.023	0.052	-0.226	-0.093
SPONS	-0.680	-0.744	-0.591	-0.591	-0.578	-2.293	0.034	-0.357	-0.386
USUAL_M	0.446	-0.650	-1.451	-1.451	-0.016	0.137	0.364	0.323	-0.187
PG_Jr	-0.554	0.023	-0.474	-0.474	-0.168	2.912	0.828	0.203	0.257
PG_Sr	-0.067	-0.150	-0.352	-0.352	-0.143	2.594	0.806	-0.145	0.055
R_CA	-0.645	-0.226	-1.096	-1.096	0.516	0.074	-0.201	0.680	0.235
R_NC	-0.269	-0.259	-0.024	-0.024	0.494	0.151	0.496	-0.102	0.049
Constant	-0.746	-1.639	-0.288	-0.288	-3.373	-4.129	-1.766	-3.467	-1.903

Table 23. Variance explained by dependencies among measures of reasons for not seeking care

Order	Eigenvalue	Variance (percentage)
1	1.28	14.2
2	1.13	12.6
3	1.09	12.1
4	1.02	11.3
5	0.99	11.0
6	0.94	10.4
7	0.90	10.0
8	0.87	9.7
9	0.78	8.6

Table 24. Model of blood pressure check

Variable	B
AGE	0.000
FH_NOW	-0.354
R_CA	0.261
R_NC	-0.065
USUAL_M	-0.171
RETIRED	-0.554
JR_DEP	-0.403
SR_DEP	-0.475
Constant	2.617

Table 25. Model of physical exam (past year)

Variable	B
AGE	0.011
FH_NOW	-0.066
R_CA	0.084
R_NC	0.027
USUAL_M	-0.442
RETIRED	-0.161
JR_DEP	-0.086
SR_DEP	-0.301
Constant	-0.052

Table 26. Model of rectal exam
(past year)

Variable	B
AGE	0.027
FH_NOW	-0.040
R_CA	-0.070
R_NC	0.068
USUAL_M	-0.337
RETIRED	-0.437
JR_DEP	-1.215
SR_DEP	-0.438
Constant	-0.937

Table 27. Model of GYN exam
(over age 17)

Variable	B
AGE	-0.013
FH_NOW	-0.002
R_CA	0.158
R_NC	0.030
RETIRED	-0.922
JR_DEP	-0.182
SR_DEP	-0.984
USUAL_M	-0.375
Constant	2.271

Table 28. Model of breast exam
(past year)

Variable	B
AGE	-0.004
FH_NOW	-0.064
R_CA	0.161
R_NC	0.062
USUAL_M	-0.456
RETIRED	-0.773
JR_DEP	-0.192
SR_DEP	-0.975
Constant	1.910

Table 29. Model of mammogram,
ever (age 40–49)

Variable	B
AGE	0.063
FH_NOW	-0.008
R_CA	1.007
R_NC	0.863
USUAL_M	-0.419
RETIRED	-0.993
JR_DEP	-2.839
SR_DEP	-0.964
Constant	0.341

Table 30. Model of mammogram,
past 12 months (age 50+)

Variable	B
AGE	0.008
FH_NOW	-0.046
R_CA	0.228
R_NC	0.347
USUAL_M	-0.160
RETIRED	4.533
SR_DEP	4.339
Constant	-4.588

Table 31. Model of any outpatient
visit, past 6 months

Variable	B
FH_NOW	-0.573
PG_Jr	0.511
PG_Sr	0.192
SPONS	-0.236
USUAL_M	-0.166
CA	0.026
NC	-0.221
Constant	1.240

Table 32. Model of overall satisfaction
(subgroup differences)

Variable	B
CA	0.100
NC	-0.089
SPONS	0.042
PG_JR	-1.399
PG_SR	-1.018
CARELV_M	-1.100
FH_NOW	0.279
Constant	3.016

Table 33. Overall satisfaction
(interactive model)

Variable	B
FH_NOW	0.282
PG_Jr	-0.949
PG_Sr	-0.070
USUAL_M (MTF)	-0.548
CA	0.385
NC	0.370
Sponsor	0.397
Sponsor x CA	-0.422
Sponsor x NC	-0.678
MTF x PG_Jr	-0.727
MTF x PG_Sr	-1.262
Constant	2.315

Table 34. Estimates of percentage
satisfied in subgroup using
interactive model

Variable	Estimated mean
Main effects:	
E1-E4	71
Above E4	78
Retired	91
MTF	76
CIV	92
VA	78
CA	80
NC	77
Sponsor	79
Spouse	78
Interactions:	
Sponsor x CA	80
Sponsor x NC	76
Sponsor x VA	80
Spouse x CA	80
Sponsor x NC	80
Sponsor x VA	74
MTF x PG_JR	64
MTF x PG_SR	71
MTF_RET	90
CIV x PG_JR	86
CIV x PG_SR	94
CIV x RETIRED	94
Population	79

Table 35. Model of components of satisfaction

Variable	B
Component:	
Quality of care	3.370
Wait to see MD	1.352
Diag/treatment info	1.132
Time spent with MD	1.090
Time appt-visit	0.754
Time to park	0.289
\$ cost	0.248
Transport time	0.221
Design:	
R_CA	-0.076
R_NC	-0.037
SPONS	-0.052
PG_JR	-0.564
PG_SR	-0.443
Constant	-3.454

Table 36. Model of dissatisfaction
with appointment-visit gap

Variable	B
CA	-0.335
NC	0.072
SPONS	0.387
PG_JR	0.682
PG_SR	0.698
MTF_MRV	0.888
FH_NOW	-0.298
Constant	-4.486

Table 37. Model of dissatisfaction
with time to get there

Variable	B
CA	-0.054
NC	-0.774
SPONSOR	-0.313
PG_JR	0.188
PG_SR	0.365
MTF_MRV	1.011
FH_NOW	-0.307
Constant	-3.376

Table 38. Model of dissatisfaction
with time to park

Variable	B
CA	0.018
NC	-0.865
SPONSOR	-0.178
PG_JR	0.351
PG_SR	0.408
MTF_MRV	2.324
FH_NOW	-0.284
Constant	-3.420

Table 39. Model of dissatisfaction
with time waiting to see
doctor

Variable	B
CA	-0.105
NC	-0.003
SPONSOR	-0.240
PG_JR	1.171
PG_SR	0.970
MTF_MRV	1.287
FH_NOW	-0.108
Constant	-2.574

Table 40. Model of dissatisfaction with time spent with doctor

Variable	B
CA	-0.175
NC	-0.086
SPONSOR	-0.322
PG_JR	1.199
PG_SR	0.861
MTF_MRV	1.045
FH_NOW	-0.221
Constant	-3.188

Table 41. Model of dissatisfaction with diagnostic information

Variable	B
CA	-0.017
NC	0.087
SPONSOR	-0.299
PG_JR	1.250
PG_SR	0.806
MTF_MRV	1.129
FH_NOW	-0.325
Constant	-3.313

Table 42. Model of dissatisfaction with cost of care

Variable	B
CA	-0.576
NC	0.275
SPONSOR	-0.081
PG_JR	-0.288
PG_SR	0.409
MTF_MRV	-2.052
FH_NOW	-0.079
Constant	-1.565

Table 43. Model of dissatisfaction
with quality of care

Variable	B
CA	-0.267
NC	-0.045
SPONSOR	-0.230
PG_JR	1.384
PG_SR	0.953
MTF_MRV	1.031
FH_NOW	-0.291
Constant	-3.444

Linear regression tables

Multiple linear regression analysis was used to relate source of care and stratification variables to continuously distributed outcome measures. Tables 44 through 55 show the regression coefficients (B).

Table 44. Model of subgroup
differences on current
health status factor

Variable	B
PG_JR	0.533
PG_SR	0.523
CA	-0.025
NC	-0.119
SPONSOR	0.140
USUAL_M	0.008
Constant	-0.347
R-squared	0.077

Table 45. Model of subgroup differences on chronic health status factor

Variable	B
PG_JR	-0.253
PG_SR	-0.271
CA	-0.033
NC	-0.073
SPONSOR	0.024
USUAL_M	0.021
Constant	0.146
R-squared	0.016

Table 46. Model of subgroup differences on mental health status factor

Variable	B
PG_JR	0.404
PG_SR	0.125
CA	0.008
NC	-0.099
SPONSOR	-0.220
USUAL_M	0.022
Constant	-0.015
R-squared	0.031

Table 47. Model of subgroup differences on work impairment factor

Variable	B
PG_JR	0.139
PG_SR	0.122
CA	-0.105
NC	-0.050
SPONSOR	0.005
USUAL_M	-0.037
Constant	-0.039
R-squared	0.006

Table 48. Model of wait to see
doctor (minutes)

Variable	B
MTF_MRV	16.395
PG_JR	4.251
PG_SR	3.658
SPONSOR	-2.003
CA	-2.322
NC	2.933
FH_NOW	-1.351
Constant	19.745
R-squared	0.114

Table 49. Model of likelihood of
waiting ≤ 30 minutes
to see doctor

Variable	B
FH_NOW	0.103
CA	0.093
NC	-0.132
SPONSOR	0.103
MTF_MRV	-1.643
PG_JR	-0.378
PG_SR	-0.327
Constant	2.033

Table 50. Model of number of
telephone calls

Variable	B
MTF_MRV	1.487
PG_JR	0.240
PG_SR	0.131
SPONSOR	-0.148
CA	-0.620
NC	0.079
Constant	1.706
R-squared	0.129

Table 51. Model of appointment-to-visit gap (days)

Variable	B
MTF_MRV	-0.321
PG_JR	-0.654
PG_SR	-0.443
SPONSOR	-0.687
CA	0.119
NC	-0.257
Constant	3.792
R-squared	0.024

Table 52. Model of subgroup differences on PSQ access factor

Variable	B
FH_NOW	0.069
MTF	-0.469
CA	0.118
NC	-0.112
Sponsor	0.034
E1-E4	-0.131
Above E4	-0.290
Constant	0.457
R-squared	0.098

Table 53. Model of subgroup differences on PSQ quality-of-care factor

Variable	B
FH_NOW	-0.109
MTF Care	0.149
CA	0.006
NC	-0.045
Sponsor	0.048
E1-E4	0.559
Above E4	0.376
Constant	-0.373
R-squared	0.073

Table 54. Model of subgroup differences on PSQ medical cost factor

Variable	B
FH_NOW	-0.073
MTF	-0.440
CA	-0.248
NC	-0.008
Sponsor	-0.184
E1-E4	-0.253
Above E4	-0.182
Constant	0.590
R-squared	0.123

Table 55. Model of subgroup differences on PSQ general factor

Variable	B
FH_NOW	-0.142
PG_JR	0.489
PG_SR	0.431
CA	-0.098
NC	0.046
SPONSOR	-0.008
USUAL_M	0.324
Constant	-0.477
R-squared	0.152

PSQ

Principal components analysis was used to estimate factor loadings of the 18 PSQ items. The principal components were rotated with the Varimax procedure. The resulting coefficients are shown in table 56.

Table 56. PSQ Varimax factors^a

Question number	Contents	Quality	Cost	Access
38L	Hurried	-0.76	-0.01	0.28
38M	Doctors ignore me	-0.76	-0.09	0.21
38N	Doubt doctors' abilities	-0.75	-0.03	0.32
38J	Doctors too impersonal	-0.75	-0.06	0.16
38K	Friendly and courteous	0.73	0.06	-0.20
38O	Doctors spend time	0.73	0.05	-0.28
38A	Doctors explain tests	0.69	0.10	-0.21
38C	Care perfect	0.66	0.10	-0.46
38F	Doctors careful	0.66	0.19	-0.35
38D	Question diagnosis	-0.60	-0.03	0.17
38Q	Dissatisfied with care	-0.59	-0.04	0.54
38B	Office complete care	0.46	0.12	-0.39
38H	Easy access to specialists	0.35	0.18	-0.66
38I	Wait too long for emergencies	-0.30	0.08	0.58
38P	Hard to get appointment	-0.22	-0.03	0.79
38R	Access when needed	0.20	0.20	-0.75
38E	Price is OK	0.15	0.84	-0.16
38G	Can't afford	-0.03	-0.85	0.03

a. Italics indicate |values| > 0.4.

Internal consistency of a composite formed from the 18 PSQ items is shown in table 57. We report the following statistics:

- $r(i, \text{total})$ —correlation of individual item with composite
- $\text{Alpha}(-i)$ —internal consistency reliability without item
- 1st PC—coefficients of the first principal component (PC).

Table 57. PSQ general factor internal consistency reliability

Question number	Text	Mean	SD	r (i,total)	Alpha(-i)	1st PC
38A	Doctors explain reason for test well	2.30	1.02	0.639	0.917	.701
38B	Office equipped to provide all care	2.40	1.04	0.560	0.919	.616
38C	Medical care I received near perfect	2.70	1.11	0.764	0.914	.813
38D	I sometimes wonder about diagnoses	2.84	1.12	0.533	0.919	.594
38E	I can get the care I need affordably	2.31	1.15	0.340	0.924	.350
38F	Pros check everything when treating me	2.63	1.08	0.714	0.915	.764
38G	I have to pay more than I can afford	3.88	1.09	0.179	0.927	.176
38H	I have easy access to specialists	2.77	1.20	0.637	0.917	.679
38I	Wait too long for emergency care	2.85	1.23	0.499	0.920	.550
38J	Doctors are too impersonal	3.44	1.06	0.651	0.916	.712
38K	Doctors are friendly and courteous	2.16	0.95	0.660	0.916	.723
38L	People who treat me hurry too much	3.08	1.16	0.719	0.915	.777
38M	Doctors sometimes ignore me	3.29	1.10	0.696	0.915	.753
38N	I doubt the ability of the doctors	3.39	1.12	0.740	0.914	.796
38O	Doctors spend plenty of time with me	2.77	1.10	0.701	0.915	.761
38P	Hard to get a fast appointment	3.03	1.30	0.577	0.918	.620
38Q	Unhappy with some things	2.95	1.21	0.739	0.914	.786
38R	Can get care when needed	2.49	1.13	0.567	0.918	.601
Alpha					0.922	

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